## GECH43A/DECH43A — INORGANIC CHEMISTRY — IV

Time : Three hours                    Maximum : 75 marks

### SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What kind of samples give I.R and Raman Spectra.

2. What is "stokes frequency"?

3. Give the uses of NQR spectroscopy.

4. What is pure NQR spectroscopy?

5. Write and explain Zeeman equation.

6. Explain the origin of vibrational structure in PES.

7. What are the advantages of HPLC?

8. What is ICP-AAS? Give its advantages.

9. Define magnetic susceptibility.

10. Mention two applications of amperometry.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) How do you differentiate geometric isomers using IR spectroscopy.

Or

(b) Discuss the applications of Raman studies in elucidating the structure of complexes.

12. (a) Write a short note on "NMR shift Reagents".

Or

(b) Explain the principle of Mossebauer spectroscopy and its application for the study of tin compounds.

13. (a) Deduce the line shape analysis using McConnels equation in slow and fast exchange processes.

Or

(b) What is the reason for anisotropy in 'g' value? Explain.

14. (a) Discuss the principle and applications of AES and AFS.

Or

(b) Deduce the principle and types of detectors in HPLC.

15. (a) Discuss the determination of magnetic susceptibility of metal complexes by Faraday method.

Or

(b) Illustrate the principle, advantages and application of Laser Raman spectroscopy.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Illustrate the application of IR spectroscopy in the structural elucidation of coordination complexes.

17. (a) Write a note on $^{19}F$ NMR spectroscopy. (5)

(b) How Mossbauer spectroscopy is helpful in the elucidation of bonding in iron complexes. (5)

18. Illustrate the principle of electron spin resonance spectroscopy and its applications for the study of vanadyl and manganese complexes.

19. Discuss the principle, instrumentation and applications of AAS.

20. Describe the principle and instrumentation of polarography.

———————